



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,575	09/27/2001	Tatsuya Maeda	011296	9690

23850 7590 07/14/2003

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

BARTH, VINCENT P

ART UNIT	PAPER NUMBER
----------	--------------

2877

DATE MAILED: 07/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/963,575

Applicant(s)

MAEDA, TATSUYA

Examiner

Vincent P. Barth

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa, U.S. Patent No. 5,377,278 (27 Dec., 1994), in view of Kent, et al., U.S. Patent No. 6,047,084 (04 Apr., 2000).

3. Referring to Claim 1, Ichikawa discloses a system for inspecting solderless terminals using image analysis, wherein a wire is crimped with a sheathed wall (see Fig. 3). The connection is illuminated (see Fig. 1, element 11), following which image analysis is used to inspect the quality of the crimp (col. 5, ln. 46, et seq.). Ichikawa does not disclose that an area of the crimped portion is calculated. However, Kent discloses a method for determining whether a soldered connection is adequate by calculating the coverage area of the lead, and based on comparison to a threshold, deeming the connection to have been properly manufactured (col. 13, ln. 59 to col. 14, ln. 3). Ichikawa and Kent are analogous art, since they are from a similar problem solving area, in that each involves determining whether an electrical connection is adequate. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ

Art Unit: 2877

97, 103-104 (Fed. Cir., 1983). The motivation for combining the references would have been to use the image analysis techniques of Kent for the inspection of crimped connections, since Ichikawa already explicitly uses at least one image analysis technique to accomplish said goal. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to gain such benefit. Applicant has argued that Kent is not analogous art since, *inter alia*, Kent discloses methods including solder paste bonds. This is a false distinction for at least three reasons. Firstly, the passage cited in Kent in the previous Office Action, namely column 13 line to column 14 line 3, describes an embodiment in which the solder paste data is not considered. The context is provided as follows: "If configured to assume that the solder paste 200 was accurately placed ... and not to consider the paste data generated ... the part placement measurement machine determines if the part is defective placed by comparing the *lead to pad coverage area* ..." (col. 13, lns. 54-60, emphasis added). This portion of the disclosure clearly describes image analysis of the part itself, exclusive of any data relating to solder paste. The aforementioned "pads" are the regions on which bonds of any sort are to be formed, with or without solder paste. Secondly, the disclosure in Kent contemplates alternative embodiments in which solder paste is not used, but where the interaction between the part and the site may be independently evaluated. The language in Kent is as follows: "... the present processes detect the location of the paste *or part* and evaluates the interaction between the paste and the site and/or *part and the site*." (col. 2, lns. 29-33, emphasis added). Thirdly, the instant Application involves pressure welded bonds (see Figure 2), which are merely an art recognized equivalent to soldered bonds, wherein soldered bonds have generally improved strength. Bond strength is not at issue in the present discussion, but rather, the quality of the

Art Unit: 2877

electrical connection between parts. It is the measurement of the quality of the connection which Kent discloses, and wherein the area of the interest is calculated to determine such quality. In this context, and especially in light of the aforementioned passages in Kent, those skilled in the art would be expected to consider the teachings of Ichikawa and Kent to be analogous.

4. Referring to Claim 5, Ichikawa discloses a system for inspecting solderless terminals using image analysis, wherein a wire is crimped with a sheathed wall (see Fig. 3). The connection is illuminated (see Fig. 1, element 11), following which image analysis is used to inspect the quality of the crimp (col. 5, ln. 46, et seq.) by means of a camera 3 (see Fig. 2, element 3). Ichikawa does not disclose that an area of the crimped portion is calculated. However, Kent discloses a method for determining whether a soldered connection is adequate by calculating the coverage area of the lead, and based on comparison to a threshold, deeming the connection to have been properly manufactured (col. 13, ln. 59 to col. 14, ln. 3). Ichikawa and Kent are analogous art, since they are from a similar problem solving area, in that each involves determining whether an electrical connection is adequate. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983). The motivation for combining the references would have been to use the image analysis techniques of Kent for the inspection of crimped connections, since Ichikawa already explicitly uses at least one image analysis technique to accomplish said goal. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to gain such benefit.

5. Referring to Claim 6, Ichikawa discloses that both the lighting arrangement and the camera can be positioned in a variety of positions in order to inspect the crimp (see Figs. 1, 2, 19,

Art Unit: 2877

20 and 22). In the alternative, the placement of the lighting and camera means in the instant Application represents a non-critical limitation. The Specifications in the instant Application do not disclose why such positioning is a critical limitation over the prior art as disclosed in Ichikawa, and have not set forth any new and unexpected results over the prior art obtained with this feature. Moreover, it appears that the present invention proposed would perform equally well with the lighting and camera arrangements as disclosed in the prior art. Accordingly, this feature would have been obvious to those skilled in the art at the time of the invention. See MPEP §2144.05(III) and §§716.02-716.02(g) for a discussion of criticality and unexpected results.

6. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa, U.S. Patent No. 5,377,278 (27 Dec., 1994), in view of Kent, et al., U.S. Patent No. 6,047,084 (04 Apr., 2000), further in view of Shields, et al., U.S. Pat. No. 5,899,959 (04 May 1999).

7. Referring to Claim 2, Ichikawa discloses a system for inspecting solderless terminals using image analysis, wherein a wire is crimped with a sheathed wall (see Fig. 3). The connection is illuminated (see Fig. 1, element 11), following which image analysis is used to inspect the quality of the crimp (col. 5, ln. 46, et seq.) by means of a camera 3 (see Fig. 2, element 3). Ichikawa does not disclose that an area of the crimped portion is calculated. However, Kent discloses a method for determining whether a soldered connection is adequate by calculating the coverage area of the lead, and based on comparison to a threshold, deeming the connection to have been properly manufactured (col. 13, ln. 59 to col. 14, ln. 3). Ichikawa and Kent are analogous art, since they are from a similar problem solving area, in that each involves

Art Unit: 2877

determining whether an electrical connection is adequate. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983). The motivation for combining the references would have been to use the image analysis techniques of Kent for the inspection of crimped connections, since Ichikawa already explicitly uses at least one image analysis technique to accomplish said goal. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to gain such benefit. Neither Ichikawa nor Kent discloses that the system should be placed inside a box with a dark inner surface to reduce the effects of ambient light as claimed. However, the feature claimed for reducing ambient light has been well known in the art, and is illustrated by Shields, which discloses generally a measurement and inspection system. Shields discloses that a cover box 64 (Fig. 2) surrounds the optical equipment, and that the inside of the box is painted black to further reduce the effects of ambient light (col. 7, lns. 5-11). Ichikawa, Kent and Shields are analogous art, since they are from a similar problem solving area, in that each involves optical inspections. Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention, in order to gain the benefit of reducing ambient light.

8. Referring to Claims 3 and 4, Ichikawa discloses that both the lighting arrangement and the camera can be positioned in a variety of positions in order to inspect the crimp (see Figs. 1, 2, 19, 20 and 22). In the alternative, the placement of the lighting and camera means in the instant Application represents a non-critical limitation. The Specifications in the instant Application do not disclose why such positioning, including a light source inclination of less than 45 degrees, is a critical limitation over the prior art as disclosed in Ichikawa, and have not set forth any new and unexpected results over the prior art obtained with this feature. Moreover, it appears that

Art Unit: 2877

the present invention proposed would perform equally well with the lighting and camera arrangements as disclosed in the prior art. Accordingly, this feature would have been obvious to those skilled in the art at the time of the invention. See MPEP §2144.05(III) and §§716.02-716.02(g) for a discussion of criticality and unexpected results.

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa, U.S. Patent No. 5,377,278 (27 Dec., 1994), in view of Kent, et al., U.S. Patent No. 6,047,084 (04 Apr., 2000), Shields, et al., U.S. Pat. No. 5,899,959 (04 May 1999), and further in view of Hoki, U.S. Pat. No. 5,774,574 (30 Jun., 1998).

10. Referring to Claim 7, the combination of Ichikawa, Kent and Shields as discussed above disclose all of the limitations in Claims 2-6, except that at least a partial image of the crimping piece is analyzed. Hoki discloses a pattern defect detection system in which image analysis is used, and which further discloses that partial images may be taken of the object (col. 3, lns. 25-28). Ichikawa, Kent, Shields and Hoki analogous art, since they are from a similar problem solving area, in that each involves the use of image analysis and defect detecting. See Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1572-1573, 220 USPQ 97, 103-104 (Fed. Cir., 1983). Accordingly, it would have been obvious to those skilled in the art to combine the references, at the time of the invention.

11. Referring to Claim 8, Ichikawa discloses that the lighting source may be arranged longitudinally with respect to the length of the terminal to be inspected (col. 10, lns. 35-38).

Comments

12. The following patents are of interest. Fujisawa, et al., U.S. Pat. No. 5,757,955 (26 May 1998), uses area data derived from image analysis to determine the quality of wire connections. Kodama, et al., U.S. Pat. No. 4,555,799 (26 Nov. 1985), discloses a system for inspecting crimp bonded terminals.

CONCLUSION

13. Applicants' Claims 1-8 are rejected based on the reasons set forth above.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

15. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

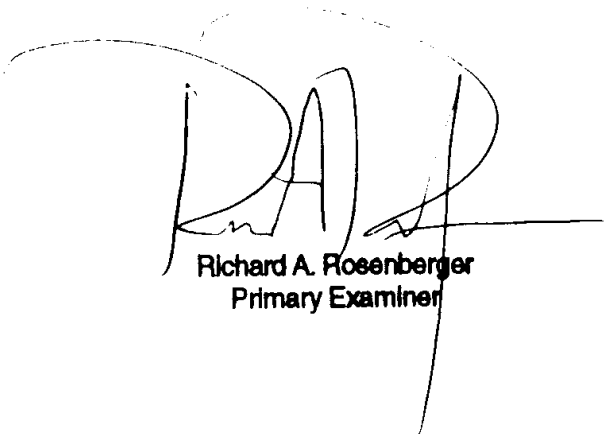
16. Any inquiries concerning this communication from the examiner should be directed to Vincent P. Barth, whose telephone number is 703-605-0750, and who may be ordinarily reached

Art Unit: 2877

from 9:00 a.m. to 5:30 p.m., Monday through Friday. The fax number for the group after final actions is 703-872-9319.

17. If attempts to reach the examiner prove unsuccessful, the examiner's supervisor is Frank G. Font, who may be reached at 703-308-4881.

18. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Richard A. Rosenberger
Primary Examiner